5. Total Maximum Daily Loads

A TMDL prescribes an upper limit on discharge of a pollutant from all sources so as to assure water quality standards are met. It further allocates this load capacity (LC) among the various sources of the pollutant. Pollutant sources fall into two broad classes: point sources, each of which receives a *wasteload allocation* (WLA); and nonpoint sources, which receive a load allocation (LA). *Natural background* (NB), when present, is considered part of the load allocation, but is often broken out on its own because it represents a part of the load not subject to control. Because of uncertainties regarding quantification of loads and the relation of specific loads to attainment of water quality standards, the rules regarding TMDLs (Water quality planning and management, 40 CFR 130) require a margin of safety (MOS) be a part of the TMDL.

Practically, the MOS is a reduction in the load capacity that is available for allocation to pollutant sources. The natural background load is also effectively a reduction in the load capacity available for allocation to human made pollutant sources. This can be summarized symbolically as the equation: LC = MOS + NB + LA + WLA = TMDL. The equation is written in this order because it represents the logical order in which a loading analysis is conducted. First the LC is determined. Then the LC is broken down into its components: the necessary MOS is determined and subtracted; then NB, if relevant, is quantified and subtracted; and then the remainder is allocated among pollutant sources. When the breakdown and allocation is completed we have a TMDL, which must equal the LC.

Another step in a loading analysis is the quantification of current pollutant loads by source. This allows the specification of load reductions as percentages from current conditions, considers equities in load reduction responsibility, and is necessary in order for pollutant trading to occur.

A load is fundamentally a quantity of a pollutant discharged over some period of time, and is the product of concentration and flow. Due to the diverse nature of various pollutants, and the difficulty of strictly dealing with loads, the federal rules allow for "other appropriate measures" to be used when necessary. These "other measures" must still be quantifiable, and relate to water quality standards, but they allow flexibility to deal with pollutant loading in more practical and tangible ways. The rules also recognize the particular difficulty of quantifying nonpoint loads, and allow "gross allotment" as a load allocation where available data or appropriate predictive techniques limit more accurate estimates. For certain pollutants whose effects are long term, such as sediment and nutrients, EPA allows for seasonal or annual loads.

Browns Pond is listed on the 303(d) list for habitat alteration and the North Fork Payette River is listed on the 303(d) list from Clear Creek to Smiths Ferry for flow alteration. The North Fork Payette River is listed because of the flow alteration caused by the Cascade Dam upstream. While degraded habitat is evidence of impairment, the EPA does not consider a water body to be polluted if the pollution is not a result of the introduction or presence of a pollutant. Thus, alteration of habitat or flow is not considered pollutants. Since TMDLs are not required to be established for water bodies impaired by pollution but not pollutants, a

TMDL has not been established for Browns Pond for habitat alteration or for the North Fork Payette River for flow alteration.

5.1 Instream Water Quality Targets

Instream water quality targets were selected such that they will restore full support of designated beneficial uses. Important considerations in target selections were critical periods for target application, recovery time for the water body, and appropriateness of surrogates.

Target Selection

Section 2.4 of the subbasin assessment (page 67) outlines the water quality targets/standards for each water body of concern. Accompanying each target is the justification for the target and a description of the linkage between meeting the target(s) and improving beneficial use support status. These targets and standard also serve as the targets for TMDL development. Table 41 summarizes the targets on which each respective TMDL is based. In other words, these values represent the condition(s) the water should be in when the TMDL(s) are met.

The following section describes the water quality targets used to develop TMDLs. In some cases, surrogates are used as the target. In the bank sediment TMDLs, bank stability is used as a surrogate for maintaining less than 30% fine material in the riffles or the reference condition as determined by Overton (1995) for fine material for that particular Rosgen Type stream. The sediment target for Upper and Middle Clear Creek were derived from Clear Creek subwatersheds with BOISED sediment delivery information and low overall percent fines. Shading was used as a surrogate for temperature in the Fall and Box Creek TMDLs.

Table 41. TMDL Water Quality Targets.

Pollutant	Target	Application
Sediment	80% Bank Stability	Big Creek, Round Valley Creek, Lower Clear Creek, North Fork Payette River
Sediment	12% above Natural Background sediment delivery conditions as determined by BOISED modeling	Upper and Middle Clear Creek
Temperature	85% vegetative cover for Fall Creek and 82% for Box Creek (9 degree C maximum average daily temperature during salmonid spawning season)	Fall Creek and Box Creek

Design Conditions

The North Fork Payette Watershed consists primarily of agricultural and forested land and there are few point sources. Runoff and low flow periods during summer are when these water bodies are most vulnerable to impairment. The most likely BMPs are vegetative in nature, and these are most efficient during the growing season. Thus, the critical period corresponds to the period of runoff until the end of irrigation season. This time period differs between the upper and lower elevation parts of the watershed. In the lower elevations, high flows as a result of lower elevation runoff may occur in March, whereas high elevation peak runoff may not take place until June.

For the temperature TMDLs for Fall and Box Creek, which are specifically for salmonid spawning season, the critical period is in the latter part of the salmonid spawning season (March 1-July 15th), from mid-June to July 15, which coincides with both longer days and warmer temperatures.

Monitoring Points

Monitoring locations for each water body are discussed in Section 2.4, page 67. Refer to that section for the location of monitoring points for each water body. Bank erosion inventories are areal in extent and cannot be represented by monitoring points. An attempt was made to collect or use data from monitoring stations that were representative of the segments of interest. Aerial photointerpretation of the North Fork Payette River from Cascade Dam to Cabarton Bridge was used to determine a sediment TMDL.

5.2 Load Capacity

The *Load Capacity* (LC) is the amount of pollutant a water body can receive without violating water quality standards. Seasonal variations and a *Margin of Safety* (MOS) to account for any uncertainty are calculated within the LC. The MOS accounts for uncertainty about assimilative capacity, the precise relationship between the selected target and beneficial use(s), and variability in target measurement. The LC is based on existing uses within in the watershed. The LC for each water body and specific pollutant are tailored to both the nature of the pollutant and the specific use impairment.

A required part of the loading analysis is that the LC be based on critical conditions – the conditions when water quality standards are most likely to be violated. If protective under critical conditions, a TMDL will be more than protective under other conditions. Because both LC and pollutant source loads vary, and not necessarily in concert, determination of critical conditions can be more complicated than it may appear on the surface.

Big Creek, Round Valley Creek, Lower Clear Creek, and North Fork Payette River (Cascade Dam to Cabarton Bridge)

Where sediment primarily results from streambank erosion, the load capacity is based on the load generated from banks that are greater than 80% stable. This load defines the load capacity for these streams (Table 43). This value represents the estimated quantity of pollutant the water body is believed to be able to assimilate and still maintain beneficial uses full support status.

Upper and Middle Clear Creek

The load capacity for these reaches of Clear Creek is based on 12% over the BOISED determined natural sediment yield. This level corresponds to that seen in the East Fork subwatershed that shows target levels of % fines (Table 44). This value represents the estimated quantity of pollutant the water body is believed to be able to assimilate and still maintain beneficial uses full support status.

Fall and Box Creeks

The load capacity for these creeks is based on optimal shading for the riparian vegetative community type (Table 45). This value represents the estimated quantity of pollutant (heat in kWh) the water body is believed to be able to assimilate and still maintain beneficial uses full support status.

5.3 Estimates of Existing Pollutant Loads

Regulations allow that loadings "...may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading," (Water quality planning and management, 40 CFR 130.2(I)). An estimate must be made for each point source. Nonpoint sources are typically estimated based on the type of sources (land use) and area (such as a subwatershed), but may be aggregated by type of source or land area (Table 42). To the extent possible, background loads should be distinguished from human-caused increases in nonpoint loads. Uncertainty in estimating existing pollutant loads in Clear Creek from road sediment delivery is due to assumptions made in the modeling. Uncertainty in the sediment TMDLs for Big, Clear and Round Valley Creeks stems from using an erosion inventory that estimates the results based on current bank conditions. DEQ staff also extrapolated results from sampled segments to those segments they were unable to sample, which also introduces uncertainty, particularly for Big Creek. North Fork Payette River erosion inventory input numbers were estimated from 2004 aerial photographs. Uncertainty arises from estimating bank heights and stability from aerial photographs. Box Creek salmonid spawning temperatures were partially extrapolated from Fall Creek, where data was missing. Uncertainty also exists in the exact relationship between stream shading and temperature in these watersheds.

As more data becomes available, pollutant load targets and allocations will be refined to reflect a better dataset.

The existing load for stream bank erosion TMDLs was set by calculations that took into account erosion rates, bank height, and quantity of stream bank stability. These values represent the estimated existing loads of pollutant occurring in the water bodies. Existing heat loads took into account existing shade conditions and solar radiation.

Table 42. Loads from Nonpoint Sources in North Fork Payette River Subbasin.

Wasteload Type	Location	Load	Estimation Method
Sediment	Big Creek	410 Tons/year	NRCS Channel Erosion Inventory (1983)
Sediment	Round Valley Creek	131 Tons/year	NRCS Channel Erosion Inventory (1983)
Sediment	Clear Creek	1157 Tons/year	BOISED
Sediment	Clear Creek	349 Tons/year	NRCS Channel Erosion Inventory (1983)
Sediment	North Fork Payette River	547 Tons/year	NRCS Channel Erosion Inventory (1983)
Temperature	Box Creek	62% (2.17kWh/m^2/day)	Solar Radiation Estimation
Temperature	Fall Creek	50% existing shade (3.3 kWh/m^2/day	Solar Radiation Estimation

5.4 Load Allocation

This section describes the load allocations for the North Fork Payette River watershed. The North Fork Payette River, Big Creek, Lower Clear Creek and Round Valley Creek are receiving sediment allocations due to excess streambank erosion. Middle and Upper Clear Creek are given load allocations based on sediment yield. Two different types of load allocations are given for Clear Creek due to the two different sources of sediment (instream erosion and road sediment delivery). Tables 43 and 44 show the load allocations for the representative segments.

- The current erosion rate is based on the bank geometry and lateral recession rate (as described in Appendix H) at each measured reach.
- The target erosion rate is based on the bank geometry of the measured reach and the lateral recession rate at a calculated reference reach.
- The reference reach is based on the hydrogeologic conditions for that stream that would result in greater than 80% bank stability and reference condition level fines material in riffles for streams of similar Rosgen and geologic type.
- The loading capacity is the total load present when banks are at least 80% stable. As such, the loading capacity and the load allocations are the same. Note that these are the overall decreases necessary in the stream but can only reasonably apply to areas where banks are less than 80% stable.

Table 43. Big Creek, North Fork Payette River, Lower Clear Creek and Round Valley Creek Load Allocation.

Water Body	Current Erosion Rate (tons/mile / year)	Target Erosion Rate (tons/mile / year)	Current Total Erosion (tons/year)	Load Capacity & Load Allocation (tons/year)	% Decrease
Big Creek	62.56	48.61	528	410	22
Lower Clear Creek	86	45	349	182	48
Round Valley Creek	33	26.67	131	107	18
North Fork Payette River (Cascade Dam to Clear Creek)	72	45	864	547	36

Table 44. Middle and Upper Clear Creek Load Allocation.

Water Body	Current Sediment Yield (tons/year)	Natural Background (tons/year)	Load Capacity (tons/year)	Load Allocation (tons/year)	% Decrease
Middle Clear Creek	1157	957	1081	124	38

Load allocations for Fall and Box Creeks are based on shade targets developed for these streams (Table 45). No Waste Load Allocations are made because there are no point sources of pollutants in the watershed nor are there expected to be any that would discharge heat to these creeks.

Table 45. Fall and Box Creek Load Allocation.

Water Body	Existing Shade	Load Capacity (potential shade)	Load Allocation (% shade increase needed)
Box Creek	**62% (2.17 kWh/m^2/day)**	**82% (1.15 kWh/m^2/day)**	**20%**
Fall Creek	**50% (3.3 kWh/m^2/day)**	**85% (0.957 kWh/m^2/day)**	**35%**

Margin of Safety

The margin of safety for the North Fork Payette River, Big Creek, Round Valley Creek and lower Clear Creek sediment TMDLs are implicit due to several conservative factors used to determine the existing sediment loads. These factors include the following:

- the erosion rate of a reference reach with 80% bank stability is correlated with target rates of <30% percent fines or the percent fines found in similar Rosgen and geologic type reference condition reaches
- the desired bank erosion rates are representative of background conditions
- the water quality target for percent fines is consistent with values measured and set by local land management agencies based on established literature values and incorporate an adequate level of fry survival to provide for stable salmonid production.

The upper and middle reaches of Clear Creek where BOISED modeling was done, incorporate the margin of safety in the target by using conservative sediment delivery targets. The sediment targets were chosen based on the East Fork Clear Creek watershed, which had low percent fines.

The Fall and Box Creek TMDLs incorporate potential vegetative shading as the target, which is based on optimal cover. Using optimal cover, which is the best cover that can be achieved given the plant communities and present channel width, is conservative and inherently employs a margin of safety.

Seasonal Variation

This TMDL accounts for seasonal variation by recognizing that loading varies substantially by season and between years and impacts are felt over multi-year timeframes. Moreover, in contrast to pollutants that cause short-term beneficial use impacts, and are thus sensitive to seasonal variation and critical conditions, the sediment and nutrient impacts in these watersheds occur over much longer time scales. For these reasons, the longer timeframe (tons per year) used in this TMDL is appropriate.

Seasonal variation in the watershed is primarily driven by flow. Spring runoff flows represent the highest flow regimes. Pollutant delivery is associated primarily with runoff flows, including rain–on-snow events, which can result in significant peaks in the hydrograph.

The critical period for Big Creek, Round Valley Creek and Clear Creek is year round to account for rain- on-snow events, which may occur in fall, spring or winter, and heavy rainfall associated with microburst type events which can occur in summer. These creeks are the most vulnerable during high flow events.

The critical period for the North Fork Payette River for sediment is year round to account for sediment delivery from creeks like Round Valley and Clear Creek. For sediment generated by instream channel erosion within the large river system, the critical period is during May and June, which are the times of high flow in this dam controlled system that lead to transport of bedload downstream.

The critical period for Fall and Box Creeks is during salmonid spawning season. Seasonal variation occurs in large part due to changes in solar radiation loading and air temperature as the year progresses, with temperature peaking in mid-July and early August. The salmonid spawning temperatures are typically exceeded starting around the summer solstice (June 21st) and continuing through mid-July. The TMDL addresses the critical period and seasonal variation by developing shade targets that will be met during this time.

Background

Background sediment levels for the North Fork Payette River, Big Creek, Round Valley Creek, and Clear Creek are accounted for in the 80% bank stability target, which allows for 20% of the bank to be less than stable, which is to be expected in a stream's naturally functioning state. Thus, background is considered but no adjustments are made to the allocation.

The BOISED modeling of the Upper and Middle Clear Creek watersheds determined natural sediment yield (natural background). For this particular watershed, natural background is 956 tons of sediment/year. BOISED uses soil creep (the slow downslope movement of soil resulting from gravitational forces.

It is difficult to determine natural background heat load, but it is assumed that by establishing and achieving the prescribed shade targets, any additional heat loading that results in temperatures above the standard is part of natural background heat loading. Otherwise, natural background is implicit in the state temperature standard and the potential canopy cover.

Reserve

Big Creek, Round Valley Creek, North Fork Payette River and Clear Creeks do not include a reserve for growth. While growth may occur, the expectation is that no additional bank sediment will be discharged to the systems as a result of the growth. Bank stability can be maintained through forestry, agricultural, and urban/suburban best management practices.

Fall and Box Creeks lie entirely within state and federal land. No reserve for growth is included because no growth is expected, and timber harvest and other activities should be able to continue in the watershed and still meet the vegetative cover target.

Remaining Available Load

The remaining available load is allocated as shown in Table 46.

Table 46. Load Nonpoint Source Allocations for North Fork Payette River Subbasin.

Source	Pollutant	Allocation	Time Frame for Meeting Allocations
Big Creek	Sediment generated from bank erosion	410 tons/year	5-15 years
Clear Creek	Sediment from roads	124 tons/year	5 years
Clear Creek	Sediment generated from bank erosion	182 tons/year	5-15 years
Round Valley Creek	Sediment generated from bank erosion	107 tons/year	5-15 years
North Fork Payette River (Cascade Dam to Smiths Ferry)	Bedload sediment generated from bank erosion	547 tons/year	
Box Creek	Temperature	1.15 $kWh/m^2/day$ (82% available shade)	5-15 years
Fall Creek	Temperature	0.957 $kWh/m^2/day$ (85% available shade)	5-15 years

Construction Storm Water and TMDL Waste Load Allocations

The following is general information on construction storm water and the significance of construction storm water to TMDLs.

Construction Storm Water

The Clean Water Act requires operators of construction sites to obtain permit coverage to discharge storm water to a water body or to a municipal storm sewer. In Idaho, EPA has issued a general permit for storm water discharges from construction sites. In the past storm water was treated as a non-point source of pollutants. However, because storm water can be managed on site through management practices or when discharged through a discrete conveyance such as a storm sewer, it now requires a *National Pollution Discharge Elimination System* (NPDES) Permit.

The Construction General Permit (CGP)

If a construction project disturbs more than one acre of land (or is part of a larger common development that will disturb more than one acre), the operator is required to apply for permit coverage from EPA after developing a site-specific *Storm Water Pollution Prevention Plan.*

Storm Water Pollution Prevention Plan (SWPPP)

In order to obtain the Construction General Permit operators must develop a site-specific Storm Water Pollution Prevention Plan. The operator must document the erosion, sediment, and pollution controls they intend to use, inspect the controls periodically and maintain the best management practices (BMPs) through the life of the project.

Construction Storm Water Requirements

When a stream is on Idaho's § 303(d) list and has a TMDL developed DEQ now incorporates a gross waste load allocation (WLA) for anticipated construction storm water activities. Due to the complexity of determining loads and the lack of data for doing so, a wasteload allocation for this TMDL is not determined. A construction activity that obtains a permit and follows BMPs will be considered in compliance with the TMDL. TMDLs developed in the past that did not have a WLA for construction storm water activities will also be considered in compliance with provisions of the TMDL if they obtain a CGP under the NPDES program and implement the appropriate Best Management Practices.

Typically there are specific requirements you must follow to be consistent with any local pollutant allocations. Many communities throughout Idaho are currently developing rules for post-construction storm water management. Sediment is usually the main pollutant of concern in storm water from construction sites. The application of specific best management practices from *Idaho's Catalog of Storm Water Best Management Practices for Idaho Cities and Counties* is generally sufficient to meet the standards and requirements of the General Construction Permit, unless local ordinances have more stringent and site specific standards that are applicable.

5.5 Implementation Strategies

DEQ recognizes that implementation strategies for TMDLs may need to be modified if monitoring shows that the TMDL goals are not being met or significant progress is not being made toward achieving the goals. DEQ also recognizes the importance of ensuring that a Best Management Practice (BMP) is suited for a particular watershed. As such, DEQ relies on designated agencies to use their expertise in assisting landowners and other agencies in determining BMPs that will not only work in reducing pollutants but will have longevity and be appropriate for the area.

Time Frame

The implementation plan must demonstrate a strategy for implementing and maintaining the plan and the resulting water quality improvements over the long term. The final timeline should be as specific as possible and should include a schedule for BMP installation and/or evaluation, monitoring schedules, reporting dates, and milestones for evaluating progress. There may be disparity in timelines for different subwatersheds. This is acceptable as long as there is reasonable assurance that milestones will be achieved.

The implementation plan will be designed to reduce pollutant loads from sources to meet TMDLs, their associated loads, and water quality standards. DEQ recognizes that where implementation involves significant restoration, water quality standards may not be met for quite some time. In addition, DEQ recognizes that technology for controlling nonpoint source pollution is, in some cases, in the development stages and will likely take one or more iterations to develop effective techniques.

A definitive timeline for implementing the TMDL and the associated allocations will be developed as part of the implementation plan. This timeline will be developed in consultation with the WAG, the designated agencies, and other interested publics. In the meantime, implementation planning will begin immediately (2005). The goal is to attain the water quality standards and return beneficial uses to full support in the shortest time possible. DEQ expects full implementation of the TMDL and recovery of the beneficial uses to take upwards of 20 years. Some subwatersheds may take less time and some may take more, depending on the complexity of the system. Vegetative BMPs may take between 5-15 years to reach maximum effectiveness. Thus, a phased approach with a feedback loop cycle of monitoring and reevaluation of BMP effectiveness, is essential in meeting TMDL pollutant reduction goals.

Approach

The goal of the CWA and its associated administrative rules for Idaho is that water quality standards shall be met or that all feasible steps will be taken towards achieving the highest quality water attainable. This is a long-term goal in this watershed, particularly because nonpoint sources are the primary concern. To achieve this goal, implementation must commence as soon as possible.

The TMDL is a numerical loading that sets pollutant levels such that instream water quality standards are met and designated beneficial uses are supported. DEQ recognizes that the TMDL is calculated from mathematical models and other analytical techniques designed to simulate and/or predict very complex physical, chemical, and biological processes. Models and some other analytical techniques are simplifications of these complex processes and, while they are useful in interpreting data and in predicting trends in water quality, they are unlikely to produce an exact prediction of how streams and other water bodies will respond to the application of various management measures. It is for this reason that the TMDL has been established with a MOS.

For the purposes of the North Fork Payette River TMDL, a general implementation strategy is being prepared for EPA as part of the TMDL document. Following this submission, in accordance with approved state schedules and protocols, a detailed implementation plan will be prepared for pollutant sources. Implementation strategies will be decided upon by designated agencies and individual landowners to best suit the particular watershed. Implementation typically includes activities like bank stabilization, riparian improvements, grazing management plans, conservation planning, fencing, off-site watering, and road improvements.

For nonpoint sources, DEQ also expects that implementation plans be implemented as soon as practicable. However, DEQ recognizes that it may take some time, from several years to several decades, to fully implement the appropriate management practices. DEQ also recognizes that it may take additional time after implementation has been accomplished before the management practices identified in the implementation plans become fully effective in reducing and controlling pollution. In addition, DEQ recognizes that technology for controlling nonpoint source pollution is, in many cases, in the development stages and will likely take one or more iterations to develop effective techniques. It is possible that after application of all reasonable best management practices, some TMDLs or their associated targets and surrogates cannot be achieved as originally established. Nevertheless, it is DEQ's expectation that nonpoint sources make a good faith effort to achieving their respective load allocations in the shortest practicable time.

DEQ recognizes that expedited implementation of TMDLs will be socially and economically challenging. Further, there is a desire to minimize economic impacts as much as possible when consistent with protecting water quality and beneficial uses. DEQ further recognizes that, despite the best and most sincere efforts, natural events beyond the control of humans may interfere with or delay attainment of the TMDL and/or its associated targets and surrogates. Such events could be, but are not limited to floods, fire, insect infestations, and drought. Should such events occur that negate all BMP activities, the appropriateness of re-implementing BMPs will be addressed on a case by case basis. In any case, post event conditions should not be exacerbated by management activities that would hinder the natural recovery of the system.

For some pollutants, pollutant surrogates have been defined as targets for meeting the TMDLs. The purpose of the surrogates is not to bar or eliminate human access or activity in the basin or its riparian areas. It is the expectation, however, that the specific implementation plan will address how human activities will be managed to achieve the water quality targets and surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to physical, legal, or other regulatory constraints. To the extent possible, the implementation plan should identify potential constraints, but it should also provide the ability to mitigate those constraints should the opportunity arise. If a nonpoint source that is covered by the TMDL complies with its finalized implementation plan, it will be considered in compliance with the TMDL.

DEQ intends to regularly review progress of the implementation plan. If DEQ determines the implementation plan has been fully implemented, that all feasible management practices have reached maximum expected effectiveness, but a TMDL or its interim targets have not been achieved, DEQ may reopen the TMDL and adjust it or its interim targets.

The implementation of TMDLs and the associated plan is enforceable under the applicable provisions of the water quality standards for point and nonpoint sources by DEQ and other state agencies and local governments in Idaho. However, it is envisioned that sufficient initiative exists on the part of local stakeholders to achieve water quality goals with minimal enforcement. Should the need for additional effort emerge, it is expected that the responsible agency will work with stakeholders to overcome impediments to progress through education, technical support, or enforcement. Enforcement may be necessary in instances of insufficient action towards progress. This could occur first through direct intervention from state or local land management agencies, and secondarily through DEQ. The latter may be based on departmental orders to implement management goals leading to water quality standards.

In employing an adaptive management approach to the TMDL and the implementation plan, DEQ has the following expectations and intentions:

- Subject to available resources, DEQ intends to review the progress of the TMDLs and the implementation plans on a five-year basis.
- DEQ expects that designated agencies will also monitor and document their progress in implementing the provisions of the implementation plans for those pollutant sources for which they are responsible. This information will be provided to DEQ for use in reviewing the TMDL.
- DEQ expects that designated agencies will identify benchmarks for the attainment of TMDL targets and surrogates as part of the specific implementation plans being developed. These benchmarks will be used to measure progress toward the goals outlined in the TMDL.
- DEQ expects designated agencies to revise the components of their implementation plan to address deficiencies where implementation of the specific management techniques are found to be inadequate.

If DEQ, in consultation with the designated agencies, concludes that all feasible steps have been taken to meet the TMDL and its associated targets and surrogates, and that the TMDL, or the associated targets and surrogates are not practicable, the TMDL may be reopened and revised as appropriate. DEQ would also consider reopening the TMDL should new information become available indicating that the TMDL or its associated targets and/or surrogates should be modified. This decision will be made based on the availability of resources at DEQ.

Responsible Parties

Federal agencies include the US Forest Service, Bureau of Land Management (BLM), NRCS and BOR. State agencies include the Idaho Department of Agriculture, DEQ, Idaho Department of Lands, Idaho Department of Fish and Game and Soil Conservation Commission. The local Soil Conservation Districts will be integral in implementation.

Monitoring Strategy

The objectives of a monitoring effort are to demonstrate long-term recovery, better understand natural variability, track implementation of projects and BMPs, and track effectiveness of TMDL implementation. This monitoring and feedback mechanism is a major component of the “reasonable assurance of implementation” for the TMDL implementation plan.

The implementation plan will be tracked by accounting for the numbers, types, and locations of projects, BMPs, educational activities, or other actions taken to improve or protect water quality. The mechanism for tracking specific implementation efforts will be annual reports to be submitted to DEQ.

The "monitoring and evaluation" component has two basic categories:

- Tracking the implementation progress of specific implementation plans; and
- Tracking the progress of improving water quality through monitoring physical, chemical, and biological parameters.

Monitoring plans will provide information on progress being made toward achieving TMDL allocations and achieving water quality standards, and will help in the interim evaluation of progress as described under the adaptive management approach.

Implementation plan monitoring has two major components:

- Watershed monitoring
- BMP monitoring.

While DEQ has primary responsibility for watershed monitoring, other agencies and entities have shown an interest in such monitoring. In these instances, data sharing is encouraged. The designated agencies have primary responsibility for BMP monitoring.

Watershed Monitoring

Watershed monitoring measures the success of the implementation measures in accomplishing the overall TMDL goals and includes both in-stream and in-river monitoring. Monitoring of BMPs measures the success of individual pollutant reduction projects. Implementation plan monitoring will also supplement the watershed information available during development of associated TMDLs and fill data gaps.

In the North Fork Payette River TMDL, watershed monitoring has the following objectives:

- Evaluate watershed pollutant sources,
- Refine baseline conditions and pollutant loading,
- Evaluate trends in water quality data,
- Evaluate the collective effectiveness of implementation actions in reducing pollutant loading to the mainstem and/or tributaries, and
- Gather information and fill data gaps to more accurately determine pollutant loading.

BMP/Project Effectiveness Monitoring

Site or BMP-specific monitoring may be included as part of specific treatment projects if determined appropriate and justified, and will be the responsibility of the designated project manager or grant recipient. The objective of an individual project monitoring plan is to verify that BMPs are properly installed, maintained, and working as designed. Monitoring for pollutant reductions at individual projects typically consists of spot checks, annual reviews, and evaluation of advancement toward reduction goals. The results of these reviews can be used to recommend or discourage similar projects in the future and to identify specific watersheds or reaches that are particularly ripe for improvement.

Evaluation of Efforts over Time

Annual reports on progress toward TMDL implementation will be prepared to provide the basis for assessment and evaluation of progress. Documentation of TMDL implementation activities, actual pollutant reduction effectiveness, and projected load reductions for planned actions will be included. If water quality goals are being met, or if trend analyses show that implementation activities are resulting in benefits that indicate that water quality objectives will be met in a reasonable period of time, then implementation of the plan will continue. If monitoring or analyses show that water quality goals are not being met, the TMDL implementation plan will be revised to include modified objectives and a new strategy for implementation activities.

5.6 Conclusions

This TMDL is a starting point for restoring beneficial uses in the watershed. Since many factors influence water quality, implementation is done within an adaptive management framework. Through the efforts of both private and public entities and community members, water quality in the streams requiring TMDLs can be greatly improved.

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